

WHAT IS CLAIMED IS:

1. A low profile transformer comprising:
  - a first core and a second core respectively having a projection;
  - at least one printed circuit board serving as primary windings of
  - 5 said transformer and having a hole for allowing said projections of said
  - cores to penetrate; and
  - an insulation wire wound around said projections of said cores to
  - serve as secondary windings of said transformer.
2. The low profile transformer of claim 1 wherein said at least one
- 10 printed circuit board and said insulation wire are sandwiched by said
- cores in order.
3. The low profile transformer of claim 2 further comprising a plurality
- of insulating layers respectively located between said cores, said at least
- one printed circuit board, and said insulation wire to avoid a short
- 15 circuit formed between said primary windings and said secondary
- windings.
4. The low profile transformer of claim 1 further comprising a plurality
- of fix rods for securing said at least one printed circuit board.
5. The low profile transformer of claim 1 wherein said insulation wire is
- 20 constructed by at least one copper sheet covered by an insulating
- material.
6. The low profile transformer of claim 1 wherein said insulation wire is
- wound on a bobbin to be coupled with said at least one printed circuit
- board and said cores.
- 25 7. The low profile transformer of claim 1 wherein said insulation wire is
- a wire coated by a plurality of insulating layers.

8. The low profile transformer of claim 1 wherein said insulation wire is made of copper sheet and directly coated on a printed circuit board to serve as said secondary winding.

9. The low profile transformer of claim 1 wherein said first and second  
5 cores are ferrite cores selected from a group essentially consisting of EE cores, EI cores, ER cores and cut cores.

10. The low profile transformer of claim 1 wherein said first and second cores are made of ferrite, samarium, metal or a mixture thereof.

11. The low profile transformer of claim 1 wherein said at least one  
10 printed circuit board has a plurality of spiral traces laid out thereon.

12. The low profile transformer of claim 1 wherein said insulation wire has a plurality of leads with soldered portions.

13. The low profile transformer of claim 1 wherein said projections of said cores are aligned with each other after said cores are assembled  
15 with said at least one printed circuit board and said insulation wires to define a magnetic path and allow said insulation wires to be directly wound thereon.

14. A low profile transformer comprising:

a first core and a second core respectively having a projection;

20 a first printed circuit board and a second printed circuit board disposed between said first core and said second core to serve as primary windings of said transformer, wherein said first and second printed circuit boards have a hole for allowing said projections of said cores to penetrate therethrough;

25 an insulation wire disposed between first printed circuit board and said second printed circuit board, and wound around said projections of said cores as a secondary winding of said transformer;

a first insulating layer located between said first core and said first printed circuit board;

a second insulating layer located between said first printed circuit board and said insulation wire;

5 a third insulating layer located between said second printed circuit board and said insulation wire; and

a fourth insulating layer located between said second core and said second printed circuit board.

15 15. The low profile transformer of claim 14 further comprising a plurality of fix rods for securing said first and second printed circuit boards.

16. The low profile transformer of claim 14 wherein said insulation wire is constructed by at least one copper sheet covered by an insulating material.

15 17. The low profile transformer of claim 14 wherein said insulation wire is wound on a bobbin to be coupled with said printed circuit boards and said cores.

18. The low profile transformer of claim 14 wherein said insulation wire is a wire coated by a plurality of insulating layers.

20 19. The low profile transformer of claim 14 wherein said insulation wire is made of a copper sheet and directly coated on a printed circuit board as said secondary winding.

20. A low profile transformer comprising:

a first core and a second core respectively having a projection;

25 a first printed circuit board and a second printed circuit board disposed between said first core and said second core to serve as primary windings of said transformer, wherein said first and second

printed circuit boards have a hole for allowing said projections of said cores to penetrate therethrough, respectively;

an insulation wire disposed between said first printed circuit board and said second printed circuit board, and directly wound around said  
5 projections of said cores as a secondary winding of said transformer;  
and

a plurality of insulating layers respectively located between said first core and said first printed circuit board, said first printed circuit board and said insulation wire, said second printed circuit board and  
10 said insulation wire, or said second core and said second printed circuit board.